Specifically claims 53-57 stand rejected under 35 USC 103(a) as being unpatentable over Kamieniecki et al (5,091,691), ("Kamieniecki") in view of Yoshino et al (5,708,365), ("Yoshino"). In addition claims 54-56 and 57 stand rejected over Kamieniecki.

As written claim 53 in part requires the movement of a wafer under a head in a sealed processing chamber.

> "A semiconductor wafer fabrication system comprising: a sealed chamber for processing said semiconductor wafer having...a head assembly comprising:...a surface photovoltage sensor...said surface photovoltage sensor of said head assembly located within said sealed chamber; and a conveying apparatus conveying said wafer adjacent said voltage sensor of the head assembly."

Therefore the present claim is directed toward a processing system in which the wafer, in a processing environment, is moved below the head within a sealed chamber prior to wafer mapping.

Conversely, Kamieniecki et al (5,091,691), discloses what is evidently a closed measurement container in which a wafer is placed under a SPV head. The device as shown does not move a wafer beneath the head in a processing environment. Instead the wafer is apparently removed from the processing line and placed in a measuring apparatus. In fact as the Office Action states in part:

> "[r]egarding claim 53, Kamieniecki discloses [see Fig. 17] an apparatus for making surface photovoltage measurements of a semiconductor comprising a sealed chamber (represented as enclosure 197) [see column 12 lines 15-19] for processing the semiconductor wafer. .... However, Kamieniecki et al do not disclose a conveying apparatus as claimed.

Yoshino et al disclose a SPV measuring device in which a wafer is placed under a head and moved about causing relative motion between the surface and the head once the wafer is beneath the head. Apparently in the Yoshino device the head is smaller than the wafer and in

order to scan the entire wafer, the wafer and the head must be moved relative to each other. As the Office Action further states:

> Yoshino et al disclose [see Fig. 2] a semiconductor wafer fabrication system comprising a modulated light source (Halogen Light Source) exposing at least a portion of a semiconductor wafer (Silicon Wafer), a surface photo voltage sensor (SPV Transducer) ...and a conveying apparatus (combination of Wafer Chuck and Moving Stage) conveying the wafer (Silicon Wafer) adjacent the voltage sensor (SPV Transducer). Further, Yoshino et al teach that the addition of conveying apparatus is advantageous because it moves the wafer around so that the SPV sensor (transducer) is able to evaluate the dielectric breakdown of an oxide layer on the wafer.

The Office Action goes on to state:

> It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kamieniecki et al by adding a conveying apparatus as taught by Yoshino et al in order to move the wafer around so that the SPV sensor (transducer) is able to evaluate the dielectric breakdown of the wafer."

Applicants submit such is not the case. The Kamieniecki reference discloses only a single head in a sealed chamber with no conveying apparatus. The Yoshino reference discloses a wafer chuck and moving stage that move the wafer in various positions under the SPV sensor head once the wafer is on the stage. Neither reference teaches or suggests having an in-process measuring device in which wafers are moved under the head during their processing. Thus, while movement of the head relative to the wafer for wafer mapping purposes may occur in Yoshino, neither Kamieniecki nor Yoshino teach to bring the wafer beneath the head in a processing environment. Once the wafer has been brought beneath the head it may then be moved about for mapping purposes. However, neither Kamienieki nor Yoshino teach the initial step of conveying the wafer beneath the head as a first step. This is an arrangement that permits

the mapping of the wafer while the wafer is being processed. That is it does not interrupt the process flow as do the devices of Kamienieki and Yoshino.

Further, Applicants submit that the combining of the two references is improper in that the two references teach away from each other. Specifically in Yoshino, movement for wafer mapping purposes is necessary because the SPV transducer is not big enough to measure the entire wafer from a fixed position. The only teaching in Yoshino that there is any advantage to the addition of a wafer chuck and moving stage stems from the fact that the Yoshino SPV transducer is too small to adequately measure wafer characteristics across the entire surface of a wafer. The opposite is true in Kamieniecki where the larger head apparently obviates the need for movement. One reference requires movement due to small SPV transducer size, and in the other, the need for such movement is nonexistent because the head assembly is large enough to measure the entire wafer from a fixed wafer position. Thus there can be no motivation to combine the two to measure the electrical characteristics of a wafer because of the differences in transducer structures. All wafer movement relative to the SPV transducer in Yoshino occurs for the limited purpose of wafer mapping in order to obtain accurate measurements after a single wafer is apparently manually placed on the moving stage, and is unrelated to high volume, in process, production line measurements.

In both cited references, the wafer is loaded beneath the head and measured individually in a manner suitable only for low volume wafer measurements. The conveying apparatus as recited in claims 53-57 of the present invention makes Applicants' invention suitable for high volume production line measurements of wafer characteristics, none of which is claimed or rendered obvious in the cited references, taken together or separately. Applicants submit that claims 53-57 overcome this basis of rejection. The Office Action rejects claims 54-56 as

unpatentable over Kamieniecki. Applicants submit that claims 54-56 are allowable as depending from an allowable base claim.

The Office Action further rejects claim 57 as unpatentable over Kamieniecki. Applicants submit that claim 57 is allowable as depending from an allowable base claim.

CONCLUSION

For the above given reasons, Applicants respectfully submit that claims 53-57 are allowable as written and request entry of this response, withdrawal of all bases of rejection, and allowance of claims 53-57 in due course. The Examiner is invited to telephone Applicants under signed representative at 617-310-8664. In the event that any additional fees are due, the Commissioner is hereby authorized to charge any such fees to Attorney's Deposit Account No. 20-0531.

Respectfully submitted,

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Reg. No. 52,814

James C. De Vellis
Agent for Applicants
Testa, Hurwitz, & Thibeault, LLP
High Street Tower
125 High Street
Boston, Massachusetts 02110

Tel. No.: (617) 310-8664
Fax No.: (617) 248-7100